Glenn Research Center, Environmental Programs Manual

Chapter 26 - Stratospheric Ozone Protection

NOTE: The current version of this Chapter is maintained and approved by the Environmental Management Office (EMO). The last revision date of this chapter is July 2004. If you are referencing paper copies, please verify that it is the most current version before use. The current version is maintained on the Glenn Research Center intranet at http://osat-ext.grc.nasa.gov/emo/pub/epm/epm-contents.pdf. Approved by: EMO Chief, Michael Blotzer {mailto:Michael.J.Blotzer@nasa.gov}.

PURPOSE

This chapter establishes policies and procedures pertaining to the procurement, use, handling, disposal and overall management of ozone depleting substances (ODS), products made from or containing ODS and ODS substitutes at NASA John H. Glenn Research Center at Lewis Field and Plum Brook Station (GRC).

This chapter conforms to the Glenn Research Center's Environmental Management System (GRC EMS) as defined in Chapter 1. This chapter supports the GRC Environmental Policy, which promotes pollution prevention, regulatory compliance and continuous improvement.

APPLICABILITY

The guidance provided in this chapter applies to all employees (civil servants, support service contractors, tenant organizations or other employees) at GRC who purchase, use, handle, manage or dispose of ODS, products made from or containing ODS or ODS substitutes. This chapter is applicable to a lesser extent to other off site entities involved with GRC activities.

POLICY

It is GRC policy to phase out the use of all ODS and products made from or containing ODS in all but critical applications. For the purpose of this policy, critical applications are those that are essential to the mission and have no proven, available or cost effective market alternatives.

REGULATIONS

42 USC 7671, Title 42, Chapter 85, Subchapter VI, Stratospheric Ozone Protection
40 CFR Part 82, Protection of Stratospheric Ozone.
48 CFR Part 1, Federal Acquisition Regulation System
Executive Order 13148, Greening the Government Through Leadership in Environmental Management.
Title VI of the Clean Air Act of 1990

RESPONSIBILITIES

All Employees (civil service, support service contractor, tenant organization employees or other)

- Seek replacements for ODS materials in their appliances and/or operations and evaluate their use of ODS for criticality with a life cycle assessment as described in Chapter 15 of the GRC Environmental Programs Manual.
- Ensure that their appliances and/or operations that use ODS or an approved substitute receive proper maintenance to prevent the release of these materials to the environment.
- Notify the Chapter lead of any ODS leeks from appliances with a 50 pound or greater refrigerant charge.
- Obtain approvals from the EMO Chemical Management Team (CMT) for ODS acquisitions as outlined in Chapter 22 of the GRC Environmental Programs Manual.
- Coordinate refrigerant disposals with the EMO Waste Management Team (WMT) as outlined in Chapter 5 of the GRC Environmental Programs Manual.

Environmental Management Office (EMO)

Chemical Management Team (CMT)

- Approve or disapprove the procurement of ODS by reviewing for release all hazardous chemical Purchase Requisitions.

Pollution Prevention Team (P2)

- Approve or disapprove the criticality determinations.
- Provide support with the Life Cycle Assessment chapter of the Environmental Programs Manual.
- Provide support and technical information on regulations regarding ODS and their substitutes.

Waste Management Team (WMT)

- Handle the disposal of refrigerants at GRC

Facilities Division and Plum Brook Management Office

- Maintain a preventive maintenance program that will ensure compliance with 40 CFR 82.156 with regard to leak repairs in appliances with a 50 pound or greater ODS charge.
- Select and monitor certified contractors to service industrial heating, ventilating and air conditioning (HVAC), refrigerant systems and other related equipment.
- Verify the use of EPA certified refrigerant technicians using certified refrigerant containment recovery equipment during service, repair, removal or recovery of industrial appliances to prevent the release of refrigerants to the environment as required by 40 CFR Part 82.
- Provide support and oversight for refrigerant reclamation and recovery.
- Coordinate any industrial refrigerant disposals with the WMT.

Logistics and Technical Division

- Verify the use of EPA certified motor vehicle air conditioning (MVAC) technicians using certified refrigerant containment recovery equipment during service, repair, removal or recovery of MVAC systems to prevent the release of refrigerants to the environment as required by 40 CFR Part 82.
- Provide support and oversight for refrigerant reclamation and recovery.
- Coordinate any MVAC refrigerant disposals with the WMT.

REQUIREMENTS

Interfacing with Regulatory Agencies

At Lewis Field, the EMO is the official point of contact with regulatory agencies in regard to ODS. At Plum Brook Station, the Plum Brook Environmental Manager is the official point of contact with regulatory agencies in regard to ODS.

Purchases of ODS and products made from or containing ODS materials

Any purchase must comply with the requirements of 48 CFR Part 1, 40 CFR Part 82 and Executive Order 13148.

Certified Technician Training

A certification from an EPA approved training program as outlined in 40 CRF 82 is required of all technicians.

Certified Refrigerant Equipment

A certification in accordance with 40 CRF 82 is required of all refrigerant recovery and recycling equipment.

Refrigerant Conservation, Containment and Recovery

Any leak discovered in an appliance with a capacity of 50 pounds or more must be addressed as outlined in 40 CFR 82.156 (i) (9).

Prior to appliance disposal (except for MVAC, MVAC-like and small appliances) a technician must evacuate the refrigerants as specified in 40 CFR 82.156(a).

Prior to opening any appliances (except for MVAC) for maintenance, service, or repair, a technician must evacuate the refrigerant in either the entire unit or the part to be serviced as specified in 40 CFR 82.156(a).

DEFINITIONS

Appliance – Any device that contains and uses a Class I or Class II ODS as a refrigerant.

Class I ODS – A chemical with an ozone depleting potential of 0.2 or greater. Some examples of chemicals in this category include: Trichlorofluoromethane (R-11), Dichlorodifluoromethane (R-12), Chlorotrifluoromethane (R-13), 1,1,2-Trichlorotrifluoroethane (R-113) and 1,1,1-trichloroethane (NA 500).

Class II ODS – A chemical with an ozone depleting potential less than 0.2. Some examples of chemicals in this category include: Monochlorodifluoromethane (R-22), Dichlorotrifluoroethane (R-123), Dichlorofluoroethane (R-141b), Dichloropentafluoropropane (R-225ca) and Dichloropentafluoropropane (R-225cd)

Life cycle assessment (LCA) – Comprehensive examination of a product's environmental and economic aspects and potential impacts throughout its lifetime, including raw material extraction, transportation, manufacturing, use, and disposal.

Motor vehicle air conditioning (MVAC) system – Mechanical vapor compression refrigeration equipment used to cool the driver's or passenger's compartment of any motor vehicle. MVAC like systems include similar systems up to a charge of 20 pounds of refrigerant.

Ozone – A bluish gas composed of molecules made up of three oxygen atoms. Nearly 90% of the Earth's ozone is in the stratosphere or ozone layer. This stratospheric ozone shields the Earth from harmful ultraviolet radiation produced by the Sun with wavelengths from 280-320 nanometers (UVB). Earth's remaining ozone or ground level ozone is harmful to breathe and can damage lungs, trees, crops, and other materials.

Ozone depleting potential (ODP) – The ratio of the impact on ozone of a chemical compared to the impact of a similar mass of Trichlorofluoromethane.

Ozone Depleting Substance(s) (ODS) – a compound that contributes to stratospheric ozone depletion. ODS are generally very stable in the troposphere and only degrade under intense ultraviolet light in the stratosphere. When they break down, they release chlorine or bromine atoms, which then deplete ozone. For regulatory purposes, ODS are listed or referenced in the applicable regulatory text. US EPA maintains an up to date listing of ODS by class; class I ODS at http://www.epa.gov/ozone/ods.html and class II ODS at http://www.epa.gov/ozone/ods2.html.

Refrigerant – Any Class I ODS, Class II ODS, or approved substitute with venting restrictions. This definition is inclusive of all usage categories.

Small Appliance – means any appliance that is fully manufactured, charged, and hermetically sealed in a factory with five (5) pounds or less of a class I or class II ODS used as a refrigerant.

Technician – Any person who performs installations, maintenance, service, repair or disposal that could release refrigerants from appliances into the atmosphere.

RECORDS

Maintained by Facilities Division

- Preventive maintenance service records for appliances with a capacity of 50 pounds or more.

Maintained by Logistics and Technical Division

- Certified motor vehicle air conditioning technicians list

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